

an active matrix circuit having a first plurality of thin film transistors; and

a peripheral driver circuit, having a second plurality of thin film transistors each including an active region, for driving the first plurality of thin film transistors,

wherein a metal element is included at concentration [of 1×10^{16} to] not higher than $5 \times 10^{19} \text{ cm}^{-3}$ in the active region of at least one of only the second plurality of thin film transistors, and each of the first and second plurality of thin film transistor has a channel forming region constructed by a silicon semiconductor thin film having mono-domain structure.

Sub C³ > 6. (Amended) A semiconductor circuit for an electro-optical device formed on a substrate comprising:

an active matrix circuit having a first plurality of thin film transistors each including a first active region; and

a peripheral driver circuit, having a second plurality of thin film transistors each including a second active region, for driving the first plurality of thin film transistors,

wherein a metal element is included at concentration [of 1×10^{16} to] not higher than $5 \times 10^{19} \text{ cm}^{-3}$ in the second active regions of at least one of only the second plurality of thin film transistors, and each of the first and second active regions [is constructed by a silicon semiconductor thin film having mono-domain structure] comprises a crystalline semiconductor film which is doped with hydrogen, and has no or substantially no grain boundary therein.

Subt C⁵

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11. (Amended) A semiconductor circuit for an electro-optical device formed on a substrate comprising:

an active matrix circuit having a first plurality of thin film transistors each including a first active region; and

a peripheral driver circuit, having a second plurality of thin film transistors each including a second active region, for driving the first plurality of thin film transistors, at least one second active region including a metal element at concentration [of 1×10^{16} to] not higher than $5 \times 10^{19} \text{ cm}^{-3}$,

wherein at least one first active region includes a metal element having a concentration different from the concentration of the metal element included in the second active region,

wherein each of the first and second active regions is constructed by a silicon semiconductor thin film having mono-domain structure.

Subt C⁷

16. (Amended) A semiconductor circuit for an electro-optical device formed on a substrate comprising:

an active matrix circuit having a first plurality of thin film transistors each including a first active region; and

a peripheral driver circuit, having a second plurality of thin film transistors each including a second active region, for driving the first plurality of thin film transistors, at least one second active region including a metal element at concentration [of 1×10^{16} to] not higher than $5 \times 10^{19} \text{ cm}^{-3}$,

wherein at least one first active region includes a metal element having a lower concentration than the metal element included in the second active region,

wherein each of the first and second active regions [is constructed

a^H
by a silicon semiconductor thin film having mono-domain structure]
comprising a crystalline semiconductor film which is doped with hydrogen, and
has no or substantially no grain boundary therein.

Sub C⁹ > 21. (Amended) A semiconductor circuit for an electro-optical device
formed on a substrate comprising:

a⁵
an active matrix circuit having a first plurality of thin film
transistors constructed by a silicon semiconductor thin film having crystallinity;
and

a peripheral driver circuit, having a second plurality of thin film
transistors each including an active region, for driving the first plurality of thin
film transistors,

wherein a metal element is included at concentration [of 1×10^{16}
to] not higher than $5 \times 10^{19} \text{ cm}^{-3}$ in the active region of at least one of only the
second plurality of thin film transistors, and the active region of at least one
of the second plurality of thin film transistor has mono-domain structure.

Please add new claims 34-43 as follows:

--34. The semiconductor circuit of claim 1 wherein the metal element
is included at concentration not lower than $1 \times 10^{16} \text{ cm}^{-3}$.

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35. The semiconductor circuit of claim 6 wherein the metal element
is included at concentration not lower than $1 \times 10^{16} \text{ cm}^{-3}$.

36. The semiconductor circuit of claim 11 wherein the metal element

is included at concentration not lower than $1 \times 10^{16} \text{ cm}^{-3}$.

37. The semiconductor circuit of claim 16 wherein the metal element is included at concentration not lower than $1 \times 10^{16} \text{ cm}^{-3}$.

38. The semiconductor circuit of claim 21 wherein the metal element is included at concentration not lower than $1 \times 10^{16} \text{ cm}^{-3}$.

Sub C''

39. A semiconductor circuit for an electro-optical device formed on a substrate comprising:

an active matrix circuit having a first plurality of thin film transistors; and

a peripheral driver circuit, having a second plurality of thin film transistors each including an active region, for driving the first plurality of thin film transistors,

wherein a metal element is included at concentration not higher than $5 \times 10^{19} \text{ cm}^{-3}$ in the active region of at least one of only the second plurality of thin film transistors, and each of the first and second plurality of thin film transistor has a channel forming region constructed by a silicon semiconductor thin film having mono-domain structure, and

wherein the silicon semiconductor thin film includes a point defect of $1 \times 10^{16} \text{ cm}^{-3}$ or more, and one of hydrogen and halogen element for neutralizing the point defect at a concentration of 1×10^{15} to $1 \times 10^{20} \text{ cm}^{-3}$.

40. A semiconductor circuit for an electro-optical device formed on a substrate comprising:

an active matrix circuit having a first plurality of thin film transistors each including a first active region; and

a peripheral driver circuit, having a second plurality of thin film transistors each including a second active region, for driving the first plurality of thin film transistors,

wherein a metal element is included at concentration not higher than $5 \times 10^{19} \text{ cm}^{-3}$ in the second active regions of at least one of only the second plurality of thin film transistors, and each of the first and second active regions comprises a crystalline semiconductor film which is doped with hydrogen, and has no or substantially no grain boundary therein, and

wherein the silicon semiconductor thin film includes a point defect of $1 \times 10^{16} \text{ cm}^{-3}$ or more, and one of hydrogen and halogen element for neutralizing the point defect at a concentration of 1×10^{15} to $1 \times 10^{20} \text{ cm}^{-3}$.

41. A semiconductor circuit for an electro-optical device formed on a substrate comprising:

an active matrix circuit having a first plurality of thin film transistors each including a first active region; and

a peripheral driver circuit, having a second plurality of thin film transistors each including a second active region, for driving the first plurality of thin film transistors, at least one second active region including a metal element at concentration not higher than $5 \times 10^{19} \text{ cm}^{-3}$,

wherein at least one first active region includes a metal element having a concentration different from the concentration of the metal element included in the second active region,

wherein each of the first and second active regions is constructed

by a silicon semiconductor thin film having mono-domain structure, and
wherein the silicon semiconductor thin film includes a point defect of
 $1 \times 10^{16} \text{ cm}^{-3}$ or more, and one of hydrogen and halogen element for
neutralizing the point defect at a concentration of 1×10^{15} to $1 \times 10^{20} \text{ cm}^{-3}$.

42. A semiconductor circuit for an electro-optical device formed on
a substrate comprising:

an active matrix circuit having a first plurality of thin film
transistors each including a first active region; and

a peripheral driver circuit, having a second plurality of thin film
transistors each including a second active region, for driving the first plurality
of thin film transistors, at least one second active region including a metal
element at concentration not higher than $5 \times 10^{19} \text{ cm}^{-3}$,

wherein at least one first active region includes a metal element
having a lower concentration than the metal element included in the second
active region,

wherein each of the first and second active regions comprises a
crystalline semiconductor film which is doped with hydrogen, and has no or
substantially no grain boundary therein, and

wherein the silicon semiconductor thin film includes a point
defect of $1 \times 10^{16} \text{ cm}^{-3}$ or more, and one of hydrogen and halogen element for
neutralizing the point defect at a concentration of 1×10^{15} to $1 \times 10^{20} \text{ cm}^{-3}$.

43. A semiconductor circuit for an electro-optical device formed on
a substrate comprising:

an active matrix circuit having a first plurality of thin film